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Installation and Start-Up Instructions

NOTE: Read the entire instruction manual before starting the installation.

This symbol → indicates a change since the last issue.

SAFETY CONSIDERATIONS

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause death, personal injury, or property damage. Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use factory-authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing.

Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Use quenching cloth for brazing operations. Have fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit. Consult local building codes and National Electrical Code (NEC) for special requirements.

Recognize safety information. This is the safety-alert symbol ⚠ . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in death or personal injury.

Before installing or servicing system, always turn off main power to system. There may be more than 1 disconnect switch. Turn off accessory heater power, if applicable.

INTRODUCTION AND RECOMMENDATIONS

NOTE: In some cases noise has been traced to improper installation of equipment.

1. Locate unit away from windows, patios, decks, and so forth where unit operation sounds may disturb customer.
2. Ensure that vapor- and liquid-tube diameters are appropriate to capacity of unit.
3. Run refrigerant tubes as directly as possible by avoiding unnecessary turns and bends.
4. Leave some slack between structure and unit to absorb vibration.
5. When passing refrigerant tubes through the wall, seal opening with RTV or other pliable silicon-based caulk. (See Fig. 2.)

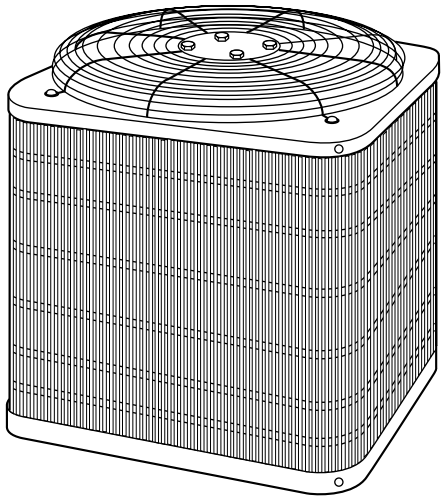

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Fig. 1—Models 38YCG

6. Avoid direct refrigerant tubing contact with water pipes, duct work, floor joists, wall studs, floors, and walls.
7. Do not suspend refrigerant tubing from joists and studs with a rigid wire or strap that comes in direct contact with tubing. (See Fig. 2.)
8. Ensure that refrigerant tubing insulation is pliable and completely surrounds vapor tube.
9. When necessary, use hanger straps which are 1 in. wide and conform to shape of tubing insulation. (See Fig. 2.)
10. Isolate hanger straps from insulation by using metal sleeves bent to conform to shape of insulation.

When outdoor unit is connected to factory-approved indoor unit, outdoor unit contains system-refrigerant charge for operation with indoor unit of the same size when connected by 15 ft of field-supplied or factory-accessory tubing. For proper unit operation, check refrigerant charge using charging information located on control-box cover and/or in the Check Charge section of this Instruction.

IMPORTANT: Maximum liquid-line size is 3/8-in. O.D. for all residential applications including long line applications.

IMPORTANT: Always install a liquid-line filter drier on any system using an existing field service lineset and/or existing indoor coil. Also, always use liquid line filter driers on burnout compressor replacments. Refer to Product Data Digest for appropriate part number. Obtain filter drier from your distributor or branch.

INSTALLATION

Step 1—Check Equipment and Job Site

UNPACK UNIT

Move to final location. Remove carton, taking care not to damage unit.

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.

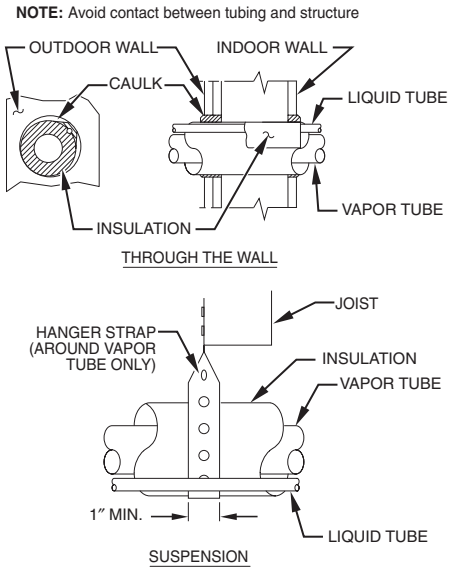


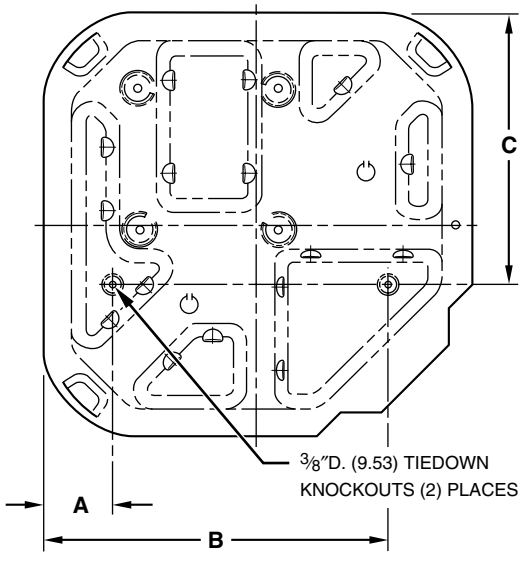
Fig. 2—Connecting Tubing Installation

INSPECT EQUIPMENT

File claim with shipping company prior to installation if shipment is damaged or incomplete. Locate unit-rating plate on unit-service panel. It contains information needed to properly install unit. Check rating plate to be sure unit matches job specifications.

Step 2—Install on a Solid, Level Mounting Pad

If conditions or local codes require the unit be attached to pad, tie-down bolts should be used and fastened through knockouts provided in unit base pan. Refer to unit-mounting pattern in Fig. 3 to determine base-pan size and knockout-hole location.



Dimensions (In.)

UNIT SIZE	UNIT BASE	TIEDOWN KNOCKOUT LOCATIONS		
		A	B	C
030	22-1/2 x 22-1/2	3-11/16	18-1/8	14-3/8
042-060	30 x 30	6-1/2	23-1/2	20

Fig. 3—Mounting Unit to Pad

On rooftop applications, mount on level platform or frame 6 in. above roof surface. Place unit above a load-bearing wall and isolate unit and tubing set from structure. Arrange supporting members to adequately support unit and minimize transmission of vibration to building. Consult local codes governing rooftop applications.

Roof-mounted units exposed to winds above 5 mph may require wind baffles to achieve adequate defrost. Consult Low-Ambient Guideline for wind-baffle construction.

NOTE: Unit must be level to within ±2° (±3/8 in./ft) per compressor manufacturer specifications.

Step 3—Clearance Requirements

When installing, allow sufficient space for airflow clearance, wiring, refrigerant piping, and service. Allow 30-in. clearance to service end of unit and 48 in. above unit. For proper airflow, a 6-in. clearance on 1 side of unit and 12 in. on all remaining sides must be maintained. Maintain a distance of 24 in. between units. Position so water, snow, or ice from roof or eaves cannot fall directly on unit.

On rooftop applications, locate unit at least 6 in. above roof surface.

Step 4—Operating Ambients

The minimum outdoor-operating ambient in cooling mode is 55°F, and the maximum outdoor-operating ambient in cooling mode is 125°F. The maximum outdoor-operating ambient in heating mode is 66°F.

Step 5—Elevate Unit

⚠ CAUTION

UNIT OPERATION HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

Do not allow water and/or ice to buid up in base pan.

In areas where prolonged freezing temperatures are encountered, elevate unit per local climate and code requirements to provide clearance above estimated snowfall level and ensure adequate drainage of unit.

Step 6—Check Indoor And Outdoor AccuRater® Piston or add TXV

Check indoor-coil piston to see if it matches the required piston shown on outdoor unit-rating plate. If it does not match, replace indoor-coil piston with piston shipped with outdoor unit. The piston shipped with outdoor unit is correct for any approved indoor-coil combination.

NOTE: If a TXV is to be installed on indoor coil, remove indoor coil piston and follow Step 7.

Step 7—Install TXV

IMPORTANT: If not factory installed, the TXV should be mounted as close to the indoor coil as possible and in a vertical upright position. Avoid mounting the inlet tube vertically down. Valve is more susceptible to malfunction due to debris if inlet tube is facing down. A factory-approved filter drier must be installed in the liquid line.

INSTALLING TXV IN PLACE OF PISTON

1. Pump system down to 2 psig and recover refrigerant.
2. Remove hex nut from piston body. Use backup wrench on fan coils.
3. Remove and discard factory-installed piston. Be sure Teflon seal is in place.
4. Reinstall hex nut. Finger tighten nut plus 1/2 turn.

NOTE: If the piston is not removed from the body, TXV will not function properly.

⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in component damage.

Service valves must be wrapped while brazing in a heat sink material, such as a wet cloth.

5. Install TXV on indoor coil liquid line. Sweat swivel adapter to inlet of indoor coil and attach to TXV outlet. Use backup wrench to avoid damage to tubing or valve. Sweat inlet of TXV, marked "IN" to liquid line. Avoid excessive heat which could damage valve.
6. Install vapor elbow with equalizer adapter to suction tube of line set and suction connection to indoor coil. Adapter has a 1/4-in. male connector for attaching equalizer tube.
7. Connect equalizer tube of TXV to 1/4-in. equalizer fitting on vapor line adapter.
8. Attach TXV bulb to horizontal section of suction line using clamps provided. Insulate bulb with field-supplied insulation tape. See Fig. 4 for correct positioning of sensing bulb.

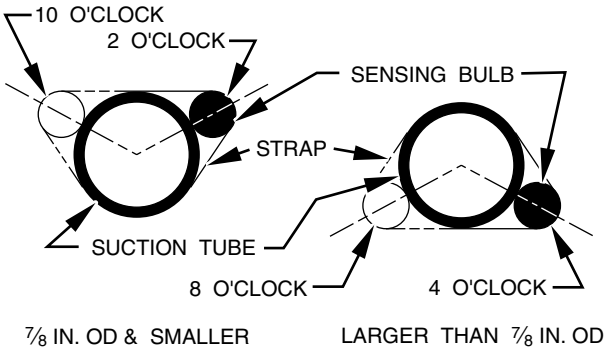


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Fig. 4—Position of Sensing Bulb

⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in unit component damage.

Remove indoor-coil piston if unit is to be installed on system with a TXV-metering device.

Step 8—Check Defrost Thermostat

Check defrost thermostat to ensure it is properly located and securely attached. There is a liquid header with a brass distributor and feeder tube going into outdoor coil. At the end of 1 of the feeder tubes, there is a 3/8-in. O.D. stub tube approximately 3 in. long. The defrost thermostat should be located on stub tube. Note that there is only 1 stub tube used with liquid header, and on most units it is the bottom circuit. (See Fig. 5.)

Step 9—Make Refrigerant Piping Connections

⚠ WARNING

PERSONAL INJURY AND ENVIRONMENTAL HAZARD

Relieve pressure and recover all refrigerant before system repair or final unit disposal.

Use all service ports and open all flow-control devices, including solenoid valves.

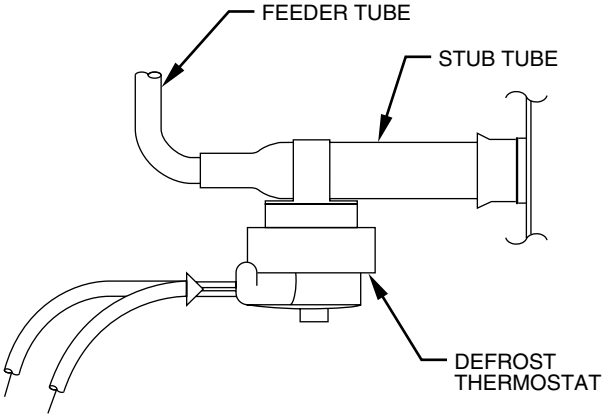

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Fig. 5—Defrost Thermostat Location

⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follw this caution may result in equipment damage or improper operation.

If ANY refrigerant tubing is buried, provide a 6 in. vertical rise at service valve. Refrigerant tubing lengths up to 36 in. may be buried without further special consideration. Do not bury more than 36 in. of refrigerant tubing in the ground.

⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

To prevent damage to unit or service valves observe the following:

- Use a brazing shield.
- Wrap service valves with wet cloth or use a heat-sink material.

⚠ CAUTION

UNIT COMPONENT DAMAGE HAZARD

Failure to follow this caution may result in unit component damage.

- Use a brazing shield
- While brazing, service valves must be wrapped in a heat-sinking material such as a wet cloth.

Outdoor units may be connected to indoor section using accessory-tubing package or field-supplied refrigerant-grade tubing of correct size and condition. For tubing requirements beyond 80 ft horizontal length or 20 ft vertical differential, substantial capacity and performance losses can occur. Following the recommendations in the Residential Split-System Long-Line Application Guideline will reduce these losses. Refer to Table 1 for field-tubing diameters.

REFRIGERANT TUBING

Connect tubing to fittings on outdoor unit vapor- and liquid-service valves. (See Table 1.) Use refrigerant-grade tubing. Refer to appropriate section below for type of service valves installed on unit.

SWEAT CONNECTION

1. Remove plastic retainer holding outdoor piston in liquid-service valve.
2. Locate adapter tube shipped with unit.
3. Install strainer in adapter tube and connect tube to service valve. (See Fig. 6.)

Table 1—Refrigerant Connections and Recommended Liquid- and Vapor-Tube Diameters (In.)

UNIT SIZE	LIQUID		RATED VAPOR (UP TO 80 FT[1])	
	Connection Diameter	Tube Diameter	Connection Diameter	Tube Diameter
030, 036	3/8	3/8	3/4	3/4
042, 048	3/8	3/8	7/8	7/8
060	3/8	3/8	7/8	1-1/8

NOTES:
1. Tube diameters are for lengths up to 80 ft horizontal or 20 ft vertical differential. For tubing lengths greater than 80 ft, consult Residential Split System Long-Line Application Guideline for Air Conditioners and Heat Pumps Using R-22 Refrigerant. Maximum liquid line size is 3/8 in., including long-line applications.
2. Do not apply capillary-tube indoor coils to these units.

4. Connect refrigerant tubing to fittings on outdoor-unit vapor- and liquid-service valves.
5. Service valves are closed from factory and ready for brazing. After wrapping service valve with a wet cloth, tubing set can be brazed to service valve using either silver-bearing or non-silver-bearing brazing material. Do not use soft solder (material that melts below 800°F). Consult local code requirements.

Refrigerant tubing and indoor coil are now ready for leak testing. This check should include all field and factory joints.

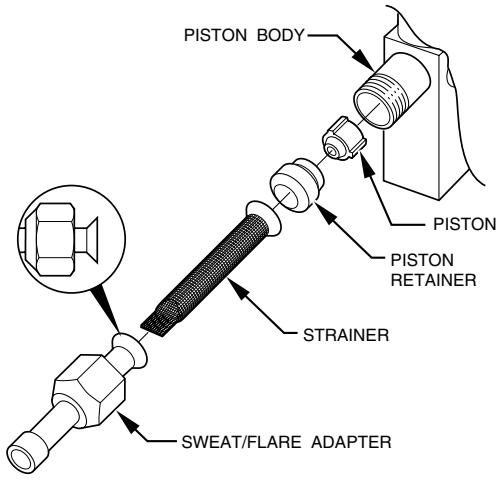

Fig. 6—Liquid-Service Valve with Sweat-Adapter Tube

FINAL TUBING CHECK

IMPORTANT: Check to be certain factory tubing on both indoor and outdoor unit has not shifted during shipment. Ensure tubes are not rubbing against each other or any sheet metal. Pay close attention to feeder tubes, making sure wire ties on feeder tubes are secure and tight.

Step 10—Make Electrical Connections

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Do not supply power to unit with compressor terminal-box cover removed.

Be sure field wiring complies with local and national fire, safety, and electrical codes, and voltage to system is within limits shown on unit-rating plate. Contact local power company for correction of improper voltage. See unit-rating plate for recommended circuit-protection device.

NOTE: Operation of unit on improper line voltage constitutes abuse and could affect unit reliability. See unit-rating plate. Do not install unit in system where voltage or phase imbalance (3 phase) may fluctuate above or below permissible limits.

NOTE: Use copper wire only between disconnect switch and unit.

NOTE: Install branch-circuit disconnect of adequate size per NEC to handle unit-starting current. Locate disconnect within sight from and readily accessible from unit, per Section 440-14 of NEC.

ROUTE GROUND AND POWER WIRES

Remove access panel and control box to gain access to unit wiring. Extend wires from disconnect through power-wiring hole provided and into unit-control box.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follw this warning could result in personal injury or death.

The unit cabinet must have an uninterrupted or unbroken ground. The ground may consist of electrical wire or metal conduit when installed in accordance with existing electrical codes.

CONNECT GROUND AND POWER WIRES

Connect ground wire to ground connection in control box for safety. Connect power wiring to contactor as shown in Fig. 7.

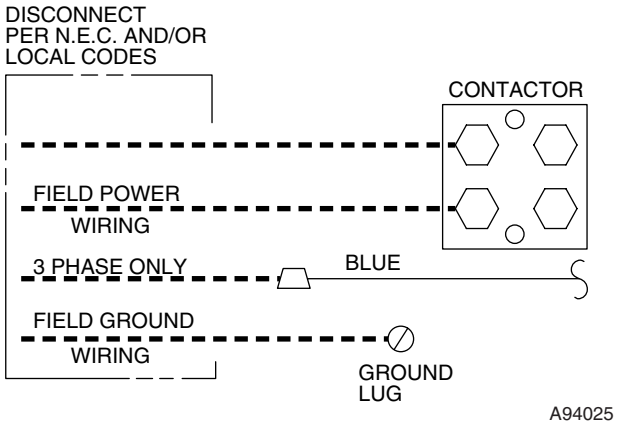

Fig. 7—Line Power Connections

CONNECT CONTROL WIRING

Route 24v control wires through control-wiring grommet and connect leads to control wiring. Refer also to Installation Instructions packaged with thermostat.

Use No. 18 AWG color-coded, insulated (35°C minimum) wire. If thermostat is located more than 100 ft from unit, as measured along the control-voltage wires, use No. 16 AWG color-coded wire to avoid excessive voltage drop.

All wiring must be NEC Class 1 and must be separated from incoming power leads.

Use furnace transformer, fan-coil transformer, or accessory transformer for control power, 24v/40va minimum.

NOTE: Use of available 24v accessories may exceed the minimum 40va power requirement. Determine total transformer loading and increase the transformer capacity or split the load with an accessory transformer as required.

FINAL WIRING CHECK

IMPORTANT: Check factory wiring and field-wire connections to ensure terminations are secured properly. Check wire routing to ensure wires are not in contact with tubing, sheet metal, and so forth.

Step 11—Compressor Crankcase Heater

When equipped with a crankcase heater, furnish power to heater a minimum of 24 hr before starting unit. To furnish power to heater only, set thermostat to OFF and close electrical disconnect to outdoor unit. A crankcase heater is required if refrigerant tubing is longer than 80 ft.

Step 12—Install Electrical Accessories

Refer to the individual instructions packaged with kits or accessories when installing.

Step 13—Start-Up

⚠ CAUTION

UNIT OPERATION AND SAFETY HAZARD

Failure to follow this caution may result in personal injury, equipment damage, or improper operation. To prevent compressor damage or personal injury, observe the following:

- Do not overcharge system with refrigerant.
- Do not operate unit in a vacuum or at negative pressure.
- Do not disable low-pressure switch.
- In scroll compressor applications, dome temperatures may be hot.

⚠ CAUTION

PERSONAL SAFETY HAZARD

Failure to follow this caution may result in personal injury. To prevent personal injury wear safety glasses, protective clothing, and gloves when handling refrigerant and observe the following:

- Front-seating service valves are equipped with Schrader valves.

⚠ CAUTION

ENVIRONMENTAL HAZARD

Failure to follow this caution may result in personal injury. Federal regulations require that you do not vent refrigerant to atmosphere. Recover during system repair or final unit disposal.

If refrigerant tubes or indoor coil are exposed to atmosphere, they must be evacuated to 500 microns to eliminate contamination and moisture in the system.

Follow these steps to properly start up the system:

1. Fully open liquid- and vapor-tube service valves.
2. Unit is shipped with valve stem(s) front seated (closed) and caps installed. Replace stem caps after system is opened to refrigerant flow. Replace caps finger-tight and tighten with wrench an additional 1/12 turn.
3. Close electrical disconnects to energize system.
4. Set room thermostat to desired temperature. Be sure set point is below indoor ambient temperature.
5. Set room thermostat to HEAT or COOL and fan control to ON or AUTO mode, as desired. Operate unit for a minimum of 15 minutes. Check system-refrigerant charge.

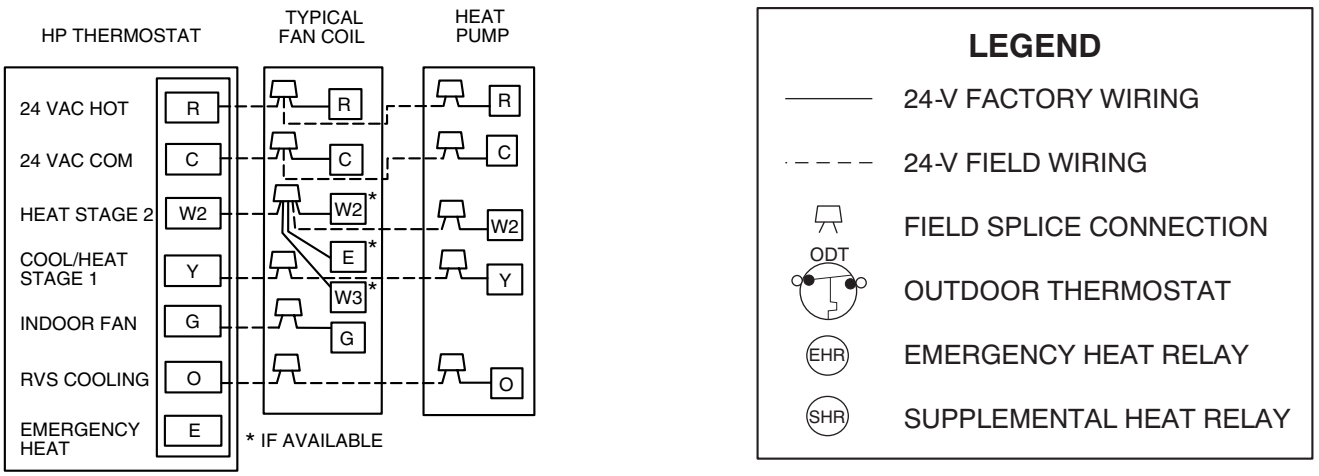

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Fig. 8—Generic Wiring Diagram
(See Thermostat Installation Instructions for wiring specific unit combinations.)

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Step 14—Check Charge

COOLING-ONLY PROCEDURE—INDOOR UNIT EQUIPPED WITH PISTON, SUPERHEAT METHOD

Factory charge is shown on unit-rating plate. To check charge in cooling mode, refer to Cooling-Only Procedure on unit wiring and charging label.

NOTE: If superheat- or subcooling-charging conditions are not favorable, charge must be weighed in accordance with unit-rating plate ±0.6 oz/ft of 3/8-in. liquid line above or below 15 ft respectively.

COOLING ONLY PROCEDURE—INDOOR UNIT EQUIPPED WITH TXV—SUBCOOLING METHOD

Factory charge and subcooling are shown on unit information plate. To check charge, follow the procedure below.

NOTE: If subcooling charging conditions are not favorable, charge must be wieghed in accordance with unit rating plate, 0.6 oz/ft of 3/8-in. liquid line above or below 15 ft, respectively. Favorable conditions fall within the ranges given on the charging chart on the outdoor unit plate.

EXAMPLE:

To calculate additional charge required for a 25-ft line set:

25 ft – 15 ft = 10 ft X 0.6 oz/ft = 6 oz of additional charge

This system requires charging by the subcooling method.

1. Operate unit a minimum of 10 minutes before checking charge.
2. Measure liquid service valve pressure by attaching an accurate gauge to service port.
3. Measure liquid line temperature by attaching an accurate thermistor type of electronic thermometer to liquid line near outdoor coil.
4. Refer to unit rating plate for required subcooling temperature.
5. Refer to Table 2. Find the point where required subcooling temperature intersects measured liquid service valve pressure.
6. To obtain required subcooling temperature at the specific liquid line pressure, add refrigerant if liquid line temperature is higher than indicated or reclaim refrigerant if temperature is lower. Allow a tolerance of ±3°F.

NOTE: In long-line applications, See the Residential Split System Long-Line Application Guideline for special charging requirements.

HEATING CHECK-CHART PROCEDURE

To check system operation during heating cycle, refer to the Heating Check Chart on outdoor unit. This chart indicates whether a correct relationship exists between system operating pressure and air temperature entering indoor and outdoor units. If pressure and temperature do not match on chart, system-refrigerant charge may not be correct. Do not use chart to adjust refrigerant charge.

NOTE: When charging is necessary during heating season, charge must be weighed in accordance with unit rating plate ±0.6 oz/ft of 3/8-in. liquid line above or below 15 ft respectively.

Table 2—Required Subcooling Termperature (°F)

LIQUID PRESSURE AT SERVICE VALVE	REQUIRED SUBCOOLING TERMPERATURE (°F)			
(PSIG)	5	10	15	20
134	71	66	61	56
141	74	69	64	59
148	77	72	67	62
156	80	75	70	65
163	83	78	73	68
171	86	81	76	71
179	89	84	79	74
187	92	87	82	77
196	95	90	85	80
205	98	93	88	83
214	101	96	91	86
223	104	99	94	89
233	107	102	97	92
243	110	105	100	95
253	113	108	103	98
264	116	111	106	101
274	119	114	109	104
285	122	117	112	107
297	125	120	115	110
309	128	123	118	113
321	131	126	121	116
331	134	129	124	119
346	137	132	127	122
359	140	135	130	125

Step 15—Final Checks

IMPORTANT: Before leaving job, be sure to do the following:

1. Securely fasten all panels and covers.
2. Tighten service valve-stem caps to 1/12-turn past finger-tight.
3. Leave User's Manual with owner. Explain system operation and periodic maintenance requirements outlined in manual.
4. Fill out Dealer Installation Checklist and place in customer file.

⚠ CAUTION

UNIT OPERATION HAZARD

Failure to follow this caution may result in equipment damage, or improper operation.

- 3-phase scroll compressors are rotation sensitive. Ensure that the compressor rotation is correct.
- A flashing LED on phase monitor indicates reverse rotation. (See Fig. 9 and Table 3.)
  This will not allow contactor to be energized.
- Disconnect power to unit and interchange 2 field-wiring leads on unit contactor.

SEQUENCE OF OPERATION

With power supplied to indoor and outdoor units, transformer is energized.

Cooling

On a call for cooling, thermostat makes circuits R-O, R-Y, and R-G. Circuit R-O energizes reversing valve, switching it to cooling position. Three phase models with scroll compressors, are equipped with a phase monitor to detect if the incoming power is correctly phased for compressor operation. If phasing is correct, circuit R-Y energizes contactor, starting outdoor-fan motor and compressor circuit. R-G energizes indoor unit-blower relay, starting indoor-blower motor on high speed.

NOTE: If the phasing is incorrect, the contactor will not be energized. To correct the phasing, interchange any 2 of the 3 power connections on the field side.

When thermostat is satisfied, its contacts open, de-energizing the contactor and blower relay. Compressor and motors should stop.

NOTE: If indoor unit is equipped with a time-delay relay circuit, the blower runs an additional 90 sec to increase system efficiency.

Heating

On a call for heating, thermostat makes circuits R-Y and R-G. If phasing is correct, circuit R-Y energizes contactor, starting outdoor-fan motor and compressor. Circuit R-G energizes indoor-blower relay, starting blower motor on high speed.

Should temperature continue to fall, R-W2 is made through second-stage room thermostat. Circuit R-W2 energizes relays, bringing on supplemental electric heat. If outdoor thermostat is used (field-installed option), only the first bank will be energized. Remaining bank of supplemental electric heat will be energized when outdoor temperature falls below outdoor thermostat setting.

When thermostat is satisfied, its contacts open, de-energizing contactor and relays. All heaters and motors should stop.

Defrost

The defrost control is a time/temperature control which includes a field-selectable (quick-connects located at board edge) time period between defrost cycles (30, 60, or 90 minutes), factory set at 90 minutes.

Defrost mode is identical to cooling mode except that outdoor-fan motor stops and second-stage heat is turned on to continue warming conditioned space.

Initially the defrost cycle timer starts when the contactor is energized and a 24v signal is present on the T1 terminal. Then the defrost cycle begins when the cycle timer times out (30, 60, 90 min) and the defrost thermostat is closed.

To initiate defrost, the defrost thermostat must be closed. This can be accomplished as follows:

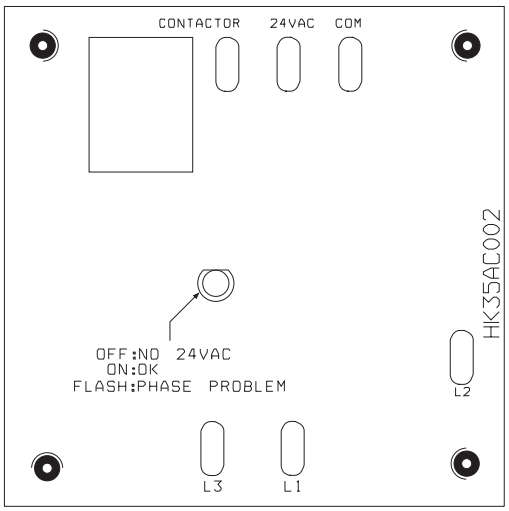

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Fig. 9—Phase-Monitor Control

Table 3—Phase-Monitor LED Indicators

LED	STATUS
OFF	No call for compressor operation
FLASHING	Reversed phase
ON	Normal

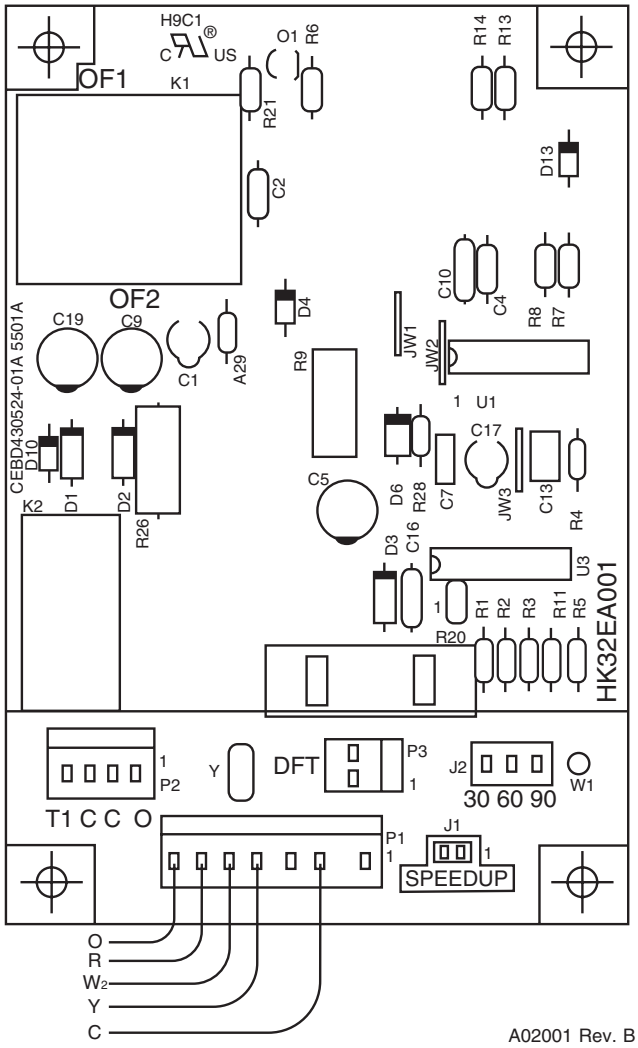

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Fig. 10—Defrost Control

Table 4—Defrost Control Speedup-Timing Sequence

PARAMETER	MINIMUM (MINUTES)	MAXIMUM (MINUTES)	SPEEDUP (NOMINAL)
30–minute cycle	27	33	7 sec
60–minute cycle	45	55	12 sec
90–minute cycle	81	99	21 sec
10–minute cycle	9	11	2 sec
5 minutes	4.5	5.5	1 sec

1. Turn off power to outdoor unit.
2. Disconnect outdoor-fan motor lead from OF2 on control board. (See Fig. 10.) Tape lead to prevent grounding.
3. Restart unit in heating mode, allowing frost to accumulate on outdoor coil.
4. After a few minutes in heating mode, liquid-line temperature should drop below closing point of defrost thermostat (approximately 30°F).
5. Short between speed-up terminals with a flat-bladed screwdriver. (See Fig. 10.) This reduces the timing sequence to 1/256th of original time. (See Table 4.)
6. When you hear reversing valve change position, remove screwdriver immediately; otherwise, control will terminate normal 10-minute defrost cycle in approximately 2 sec.

NOTE: Length of defrost cycle is dependent upon length of time it takes to remove screwdriver from test pins after reversing valve has shifted.

7. Unit will remain in defrost for remainder of defrost-cycle time or until defrost thermostat reopens at approximately 80°F coil temperature of liquid line.
8. Turn off power to outdoor unit and reconnect fan-motor lead to OF2 on control board. (See Fig. 10.)

CARE AND MAINTENANCE

For continuing high performance and to minimize possible equipment failure, periodic maintenance must be performed on this equipment.

Frequency of maintenance may vary depending upon geographic areas, such as coastal applications.

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